SUBSTITUTE SPECIFICATION

Patent Application of

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TITLE: BENCHMARKING SURVEYS

BACKGROUND – FIELD OF THE INVENTION

This invention relates to benchmarking different surveys, specifically benchmarking of Internet based surveys.

BACKGROUND–SURVEYS

Surveys or polls are commonly used to collect information. Over time a survey may be modified. Also once a survey is complete another different survey may be used to collect follow-up information. It is difficult to compare different surveys. It would be valuable to be able to simply see the results of a survey as a number or an index that would have meaning over time.

SUMMARY OF THE INVENTION

In accordance with the present invention a method of creating benchmarks for surveys that are used to graphically display over time and over multiple different surveys an overall trend.

Objects and Advantages

Accordingly, beside the objects and advantages of the method described in my patent above, some additional objects and advantages of the present invention are:

1. to provide a method of assigning goals and weights to survey elements.

2. to provide a method of determining an index based on survey results against said goals and weights.
3. to provide a graphical view of the index of related surveys over time to show trends.
4. to provide a professional web-based survey system that supports various types of survey questions and also supports the necessary goals and weights necessary to produce an index for each survey.

DRAWING FIGURES

In the drawings, closely related figures have the same number but different alphabetic suffixes.

Fig 1 illustrates the survey system process flow including the provisions for benchmarking.

Fig 2 is a structural view of the survey system of Fig 1

Figs 3A through 3B are three versions of an example survey.

Fig 4 is a table illustrating the goals, weights, and index calculations for the questions in the example survey of Fig 3A.

Fig 5 is a graph showing the results and index for the example survey of Fig 4.

Fig 6 is a graph showing the index trend of the three versions of the example survey of Figs 3A through 3C.

Reference Numerals in Drawings

100	secure server	303	survey 3
110	server web site	310	popularity objective
120	respondent member	311	popularity question
130	client user	312	honest
140	panelist	313	trustworthy
150	client web site	314	sincere
160	survey target	315	charismatic
170	network	320	performance objective
180	survey builder	321	performance question
200	database	322	taxes
220	respondent computer	323	economy
230	client computer	324	domestic policy
240	panelist computer	325	public education
260	survey target computer	326	health care
301	survey 1	330	re-election objective
302	survey 2	331	re-elect question

332 re-elect answers
346 affable
347 articulate
348 good speaker
351 foreign policy
352 social security issue
353 defense
354 disaster
359 the war
360 stand objective
361 stand question
362 social security investment
363 social security
364 social programs
365 modified social security
366 estate tax
367 gone to war
378 will vote
379 true/false
410 goal answer value column
420 weight column
430a respondent 1 response
430b respondent 2 response
430c respondent 3 response
430d respondent 4 response
440a respondent 1 calculation
440b respondent 2 calculation
440c respondent 3 calculation
440d respondent 4 calculation
450 index row
450a respondent 1 index
450b respondent 2 index
450c respondent 3 index
450d respondent 4 index
460 overall survey index
460a survey 1 index
460b survey 2 index
460c survey 3 index
500 survey 1 graph
510 survey benchmark
520 results line
600 survey trend graph
610 benchmark line
620 trend line

DESCRIPTION OF THE INVENTION

Surveys are all different, even different versions of the same survey. These differences can be due to questions added, questions removed or questions modified. Question modifications can include changing wording, changing options or changing types (changing a close ended question to an open ended question and vice versa).

Benchmarks provide a quantifiable way to conceptually grade and measure the success of a survey against goals.

One way to understand the concept of a survey benchmark is to consider an example of a river which floods from time to time. A surveyor of a town through which the river passes places a mark on a permanent object next to the river (e.g. a bridge pier, or the "bench" of the river bank). The benchmark serves as a reference for water level observations. The benchmark indicates when the river is at 100% of its capacity. The benchmark often has a scale to measure the number of feet below flood level and the number of feet above flood level. When heavy rains fall, the residents of the town can monitor the rise of the river against the benchmark and make decisions based on the trend. If the river is below the 100% mark and the trend is decreasing, the residents comfortably will stay home. However, if the river is rising close to the 100% mark and it is still raining, the residents may evacuate low-lying areas. When the river rises above the benchmark, the residents can predict the extent of the flooding by the measure of the water level above the benchmark. While there are times when observation of the benchmark and calculating its trend are not urgent, there are other times when immediate results and trend analysis is critical to decision making.

In the example of the river benchmark, the same thing, the water level, is being measured over time. However, as summarized above, in a question-based survey, the questions change over time. The present invention provides systems and methods for applying the concept of benchmarks to question-based surveys.

These benchmarks transcend surveys and differences within these surveys including question changes and wording. The benchmark uses an index that works in much the same way that a stock market index works (by selecting key stocks, weighting them and monitoring their activity as an indication of the overall stock market activity). However unlike the river example which measures only one thing (i.e. the water level), and unlike the

stock index example which uses an existing number for the same thing (i.e. the price of a certain stock) in the index calculation, the present invention provides a survey system which includes a means for assigning goal answer values and weights to differing survey questions to produce an index which transcends the differences in the questions over time.

It is not uncommon for surveys to be conducted more than once. Not only can benchmarking help measure the objectives of a survey and compare surveys, but also, by tracking them over time, measure progress towards overall market research objectives.

Fig 1–Survey System Overview

The survey system provides a computer network that can be used to design surveys in a way that the survey results can be tallied to determine an index, and the index can be correlated with the indices of other related surveys to produce a graph of the trends of the success toward the goals of the surveys. In the preferred embodiment, the survey system is implemented as a web-based survey system. Fig 1 illustrates the process flow of the survey system. Fig. 1 includes information on the physical structure of the computer network of the preferred embodiment, the software and database structure, the functions that the various components and users may use, and the data flow paths for the various actions. In the preferred embodiment, the survey system comprises a secure server 100, a server web site 110, a client web site 150, each connected to a network 170. After client users 130 sign up for membership, they are able to create and modify surveys by securely accessing a survey builder 180. Surveys are defined using predetermined formats for various types of questions. Client users have objectives for their surveys. Each question is assigned a goal answer value relative to one of the objectives. The survey system provides a means for assigning weights that are used to tally the responses to determine an index for each version of a survey. The survey system provides reports showing the results of the survey, including graphs of the indices of the various versions of surveys showing the trend of the success towards the goals and objectives.

Fig 1 will be discussed more in detail below.

Fig 2–Survey System Computer Network Structure

Fig 2 illustrates the structural view of a preferred embodiment of the survey system of Fig 1. The survey system comprises a secure server 100, a server web site 110, a client web site 150, each connected to a network 170. The secure server 100 includes a database

200. In the preferred embodiment, the database 200 is an Oracle database management system that includes a member database, a client survey database, survey templates database, a client respondent/other data database, and a respondent member database.

The survey builder 180 is accessed via the secure server web site 110. The survey builder 180 securely accesses the database 200 to maintain data regarding the members, client surveys, survey templates, client respondent demographics, and respondents. The secure server 100 and server web site 110 could be implemented on a single computer or multiple computers. If implemented on separate computers (as shown in Fig 2), the secure connection could be implemented as a direct connection, a private network, or a virtual private network (VPN), as known in the art. In some embodiments, the secure server 100 hosts the client web site 150.

The client user 130 can also specify demographics for the types of individuals they want to respond to the survey. After a survey has been created, or modified to create another version of an existing survey, the client user 130 can post the survey to the client's web site 150. The responses to survey questions are returned to the secure server 100 and database 200 via network 170.

Fig 2 shows different type of individuals who may respond to surveys. Respondent members 120, client users 130, panelists 140, and other survey targets 160 may respond to surveys via their own computers, namely, respondent computers 220, client user computers 230, panelist computers 240, and survey target computers 260, respectively. The respondent computers 220, client user computers 230, panelist computers 240, and survey target computers 260 are each connected to the network 170. These users access the surveys using a network client application, preferably a web browser.

In the preferred embodiment, the access to the survey builder and surveys is via the World Wide Web (Web) using web servers and web browsers (i.e. web clients); however, in alternate embodiments the server site and client site could be implemented as another type of network server and the client software as another type of network application (rather than a web browser).

Respondent members 120 and panelists 140 also may securely access the server web site 110 via the network 170, for example to sign up for membership, view assignment notifications, or to manage information about themselves.

Fig 3A through 3B–An Illustrative Example

In explaining the operation and features of the survey system, it may be helpful to consider an illustrative example. Figs 3A, 3B, and 3C illustrate three versions of a survey that might be given by a hypothetical political candidate at different points during that candidate's first four-year term in office. The candidate has certain objectives such as being popular, being considered as performing well, and, most important, being re-elected.

Survey 1 (301), shown in Fig 3A, is taken during the second year in office. Survey 2 (302), shown in Fig 3B, is taken during the third year in office. Survey 3 (303), shown in Fig 3C, is taken during the fourth year in office, on the day before Election Day.

Fig 3A shows survey 1 (301) composed of various questions designed to measure the candidate's objectives of popularity 310, performance 320, and re-election 330. Survey 1 (301) has different types of questions with different types of answers. For example, the popularity and re-election questions (311 and 331, respectively) have "yes" and "no" answers (see 312-315 and 332), and the performance question (321) is a direct response question having a limited range of answers values (i.e. 1-5) (see 322-326).

Fig 3B shows survey 2 (302) also composed of various questions designed to measure the candidate's objectives of popularity 310, performance 320, and re-election 330. However, now that the candidate has been in office for over two years, the candidate has become more interested on how constituents stand on the certain issues. Survey 2 (302) adds a new objective, stand on issues 360. A new type of question is used. In question 361, answers are a form of multiple-choice where the choices indicate a continuum of agreement. There were also changes in the questions between survey 1 (301) and survey 2 (302). For example, affable 346 and articulate 347 were added to measure the popularity objective 310. Also, in the performance objective 320 questions, domestic policy 324 was dropped and replaced with foreign policy 351, social security 352 and defense 353.

Fig 3C shows survey 3 (303) also composed of various questions designed to measure the candidate's objectives of popularity 310, performance 320, stand on issues 360, and re-election 330. However, on the eve of re-election, the candidate needs to know how the recent disaster and the war are going to affect re-election, and if the candidate currently has enough votes to win. Time is of the essence; based on the immediate results of the survey, the candidate will spend time and money to ensure that the objective of re-election is met. Survey 3 (303) uses a new type of question to measure the re-election objective 330.

The "will vote" question 378 is in the form of a positive statement about the vote and the answers 379 are true or false. There were also other changes in the questions between survey 1 (301, Fig 3A), survey 2 (302, Fig 3B) and now survey 3 (303). For example, affable 346, which was added in survey 2 (302, Fig 3B), has been replaced with "good speaker" 386 in survey 3 (303, Fig 3C) to measure the popularity objective 310 in a slightly different way. Also, in the performance objective 320 questions, foreign policy 351 and social security 352 were dropped and disaster 354 and the war 359 were added. The questions regarding constituents' stand on issues were all changed. The social security question 363 was inverted by removing the word "NOT" and placed first as question 365 (modified social security question). Questions on estate tax 366 and going to war 367 replaced the questions about social security investment 362 and social programs 364.

In this example, each of the three versions of the candidate's survey, i.e. surveys 1 through 3 (301 through 303), had a different number of responses, differences in the objectives being measured, and differences between similar questions. As stated above, these differences make it difficult to compare the results of one version of the survey to another. The present invention provides systems and methods that include determining an index for each survey that is a measure of the responses against the goals and objectives of the survey. The index for each survey is a measure against a benchmark that transcends the changes in the questions, questions types, and objectives of each version of the survey.

How Benchmarks Work?

As part of the survey design, clients 130 can define benchmarks. Goals and weights are used to evaluate an index that quantifies the "success" of the survey. The index works in much the same way that a stock market index works (by selecting key stocks, weighting them and monitoring their activity as an indication of the overall stock market activity). This will be explained, in the following section, by referring back to the illustrative example of the hypothetical political candidate.

Fig 4–Tallying Responses to Determine an Index

Fig 4 is a table illustrating the goals, weights, and index calculations for the questions in the example survey 1 (301) of Fig 3A. In practice, the survey is responded to by a large number of respondents (120); however, for simplicity Fig 4 shows only the responses of four hypothetical respondents (shown in columns 430a, 430b, 430c, and 430d,

respectively). The first column refers to the questions from survey 1 (301) in the same order as on Fig 3A.

In order to calculate an index, the response to each question first must be translated to a number value. A number of question types are known in the art. Different translations are used for each type of question. The survey system has a predetermined translation for each question type. The following table shows some example translations.

RESPONSE	VALUE
Strongly disagree	5
Tend to disagree	4
Don't know/No opinion	3
Tend to agree	2
Strongly agree	1
Yes	1
No	0
TRUE	1
FALSE	0

For more complex question types (e.g. "check all that apply" or matrix responses), other types of calculations are made. Examples of functions used in more complex calculations are:

- SUM added up all the values of the responses
- COUNT counting the number of values greater than zero
- EXISTS returning 1 for each item that is marked
- NOT EXISTS returning 1 for each item that is not marked
- ROW COUNT counting the number of rows in a matrix that has an answer
- SUBSTRACT subtract the value from a predetermined constant
- MULTIPLE multiple the value by a predetermined constant
- NOT convert 0 to 1 and visa versa.

The survey designer (e.g. a client user 130) selects question types from a predetermined set of question types supported by templates in the survey system and enters the text for each question and its possible responses. The survey system shows the survey designer the range of response values. For example, in creating survey 1 (301) the survey designer first specifies the popularity objective 310, selects a matrix question type, enters the

wording for the question (e.g. 311) and then enters the sub-question wording regarding honesty 312 with possible responses of "yes" and "no". In this case, the survey system would show a range of possible answer values of either 0 (for "no") or 1 (for "yes"). Likewise, another objective and question type is entered for the performance objective 320. When entering the sub-question on taxes 322 the possible range of answer values is 1 through 5 with 5 being the best. Target values can be assigned to any number of questions on the survey. The target value is the goal answer value (see column 410) for each question. For example, for sub-question on honesty 312, the goal is 1 (meaning an answer of yes, and, for the sub-question on taxes 322, the goal is only 4 (meaning good but not excellent). In this case the goal is not the highest possible because our hypothetical candidate has learned that you can't please all of the people all of the time.

Weights are then applied to these questions indicating the impact any one question has on the overall survey index, relative to other questions on the survey. In the example shown in Fig 4, the weight (see column 420) for the sub-question on honesty 312 is 8, the weight (column 420) for trustworthy 313 is 4, and so forth. The candidate has set the weight (column 420) for the re-election question (row 331) to 50. The weight for each question is the percentage of the index (row 45) that the question will contribute. In this example, the sum of the weights in the popularity objective 312-315 is 20 or 20% of the index. The sum of the weights in the performance objective 320 is 30 or 30%. The re-election question and objective is 50% of the index for survey 1 (301). As shown at row 450 the sum of the weights in column 420 is 100. For survey 2 (302), the same questions (e.g. 312, 313, and so forth) would have different weight values because there are more questions (e.g. 346 and 347) and an additional objective (i.e. stand on issues 360). When modifying survey 1 (310) to form survey 2 (302), the survey designer assigns new goal answer values and weights, with the sum of the weights being 100.

An index is then calculated for every survey that is completed by a respondent. Column 430a shows the responses by respondent 1. Column 440a shows the calculated value for each response. The calculated value is the response answer value divided by the goal answer value multiplied by the weight.

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Calc = (Response/Goal)*Weight
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The first respondent answered the honesty sub-question 312, yes, which translates to a response value of 1 and calculated value of 8. The trustworthy sub-question 313 was also answered yes, which translates to 1 and calculates to 4 because of the lower weight. The response values are translated and calculated for each question and an index is calculated as a percentage against the benchmark of 100%. The index for the survey as a whole (or for any objective) is calculated by summing the calculated values and dividing by the sum of the weights and multiplying by 100.

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Index = (SUM((Response/Goal)*Weight)/ SUM(Weight)) * 100
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It should be understood that a number could be calculated by applying goal answer values and weights to the responses to all of the questions that measure any particular objective. Although not shown in Figs 4 through 6 for simplicity, a sub-index for each objective could also be calculated and graphed as a separate graph element.

A different respondent index is calculated for each respondent to survey 1. The second respondent answered the honesty sub-question 312, no, which translates to a response value of 0 (see column 430b) and calculated value of 0 (see column 440b). The third respondent answered the honesty sub-question 312, no, which translates to a response value of 0 (see column 430c) and calculated value of 0 (see column 440c). (The third respondent does not particularly like the candidate and will not re-elect the candidate, see row 331).

As shown in row 450 of Fig 4, the index for respondent 1 (450a) was 107.5, indicating that for this respondent the candidate has exceeded the goal. The indices of respondents 2, 3, and 4 (450b, 450c, 450d) were 82, 14.5, and 97.5 respectively. The indices of each respondent is added together and divided by the number of respondents to calculate an average index for a version of a survey, which in this example for survey 1 is 75.4 (460a). The average of all the respondent indices for a version of a survey is the overall index for that version of the survey.

If respondents answer each question with the corresponding goal answer value, then the index for the survey will be 100, indicating that all the objectives to be measured by that survey have been met successfully. Generally if the respondents answer below the goal answer values, the index will be less than 100 and if the respondents answer above the goal answer values the index will be greater than 100. However, because of weighting, a high

answer value on a relatively higher weighted question will have a more positive impact on the index.

Fig 5–Survey Results

The index is a percentage that indicates the proximity of the survey answers to the desired goals with 100% indicating that the completed survey likely meets the desired goals.

Fig 5 shows a graph 500 of the individual respondent indices (450a, 450b, 450c, and 450d) for survey 1 (301). The results line 520 of the survey 1 graph 500 shows that respondent 1 was above the survey benchmark 510, respondents 2 and 4 were also close to the benchmark, but respondent 3 was far below the benchmark. The survey benchmark 510 is an index for a hypothetical respondent who answered the goal answer value for every question on the survey, thus it is a numerical way of representing that every goal and objective for the survey was meet. A graph showing the individual respondent indices is valuable to determine the level of support the candidate has on an individual basis.

Fig 6–Survey Trend Graph

The index can then be used to compare or rank surveys. As the survey designer modifies a survey, designing new versions, e.g. survey 2 (302, Fig 3B) and survey 3 (303, Fig 3C), the survey designer reevaluates the objectives and adjusts the questions as desired. New goal answer values and weights are assigned to each question, such that the sum of the weights is kept at 100. Following the steps described in relation to Fig 4 for each version of the survey, the survey system translates each response to an answer value, applies goal answer values and weights, and calculates an index for each respondent and for all of the respondents of each version of the survey.

Fig 6 shows a survey trend graph 600 of the indices of each version of the survey (460a, 460b, and 460c, respectively). The trend line 620 of the survey trend graph 600 shows that the candidate had come closer to meeting the objectives at the time of survey 2 with a survey 2 index of 92 (460b), but on the day before Election Day had dropped to a survey 3 index of 63 (460c). The benchmark line 610 shows the survey benchmark (e.g. 510) for each version of the survey. Like the benchmark used to measure water levels in the river example, the benchmark line 610 is a permanent value that can be used to compare indices from different versions of surveys. A graph showing the trend of survey indices over time is valuable to determine the level support the candidate has over time. On the day

before the election, it is important to be able to make changes to yet another version of the survey and get immediate results, especially if the level of support is decreasing in a trend that will end up below the percentage of votes needed to win the election.

Like the benchmark used to measure and determine water levels on the river, the survey indices can be used to measure and graph responses relative to objectives over a version of surveys.

The Survey System

In the preferred embodiment, the survey system is a turnkey market research application, available as a subscription-based service through secure Internet access. The service may be accessed from anywhere, anytime through a browser (as shown in the preferred embodiments in Fig 1 and Fig 2) or as a standalone application (not shown). As an Application Service Provider (ASP), the service is the only cost. There is no need to purchase hardware, database and application software; they are all included. This service utilizes the system's proprietary technology to deliver a robust, cost-effective and intuitive method for conducting all types of traditional (paper and telephone) and web-based market research:

1. Attitude and Usage
2. Concept Testing
3. Advertising Testing
4. Package/Design Testing
5. Employee Satisfaction/Feedback
6. Promotion Testing
7. New Product Testing
8. Customer Satisfaction
9. Product Registration
10. Respondent Screening

The invention is not limited to the illustrative example of the political candidate.

The survey system addresses many of the issues plaguing the market research industry today. Research professionals will have the ability to focus on performing research without the current headaches and expenses associated with the acquisition and management of the technology and resources regularly required to perform research tasks in-house. The

survey system is the complete, turnkey market research solution available from anywhere, anytime.

Fig 1– Survey System Process Flow

Fig 1 illustrates the process flow of the survey system. The survey system comprises a secure server 100, a server web site 110, a client web site 150, each connected to a network 170.

The secure server 100 comprises a member database, a client survey database, survey templates database, a client respondent/other data database, and a respondent member database.

Client users 130, namely client marketers and managers, signup for membership, design, post, and obtain reports, select respondent demographics, and maintain client respondent and other data via the server web site 110.

Individuals who are interested in taking surveys, namely respondent members 120, sign up as respondent members 120 via the server web site 110 and when notified of a survey request, respond to the survey via the client web site 150.

Individuals who match the desired demographics, namely, survey targets 160, are notified of a survey request and then respond to the survey via the client web site 150.

Professionals who have shown a particular understanding or discernment on a subject are invited to be part of a panel. These panelists 140 are notified of a survey request and then respond to the survey via the client web site 150. Panelists may be paid for their participation on the panel.

The survey builder 180 provides a means for client users 130 to define, post a version of a survey, and obtain instant, concurrent results. The survey system allows for certain goals and weights to be associated with a survey. Each version of a survey is benchmarked based on the response's relationship to the goals. These responses contribute to an index or benchmark for a survey (for example, see Fig 5). The benchmark can be charted over time and over various versions of a survey or set of surveys to determine valuable trend information (for example, see Fig 6). As shown in Fig 1, the instant, concurrent results and reports are always available–24/7.

Best Mode

The best mode implementation for this invention is an Oracle database server with a database format as shown in Fig 1. This server 180 would implement a number of programs (collectively, the survey builder 180) that would allow researchers to create surveys comprising a number of different survey questions of various types. The researcher (e.g. client user 130) would assign goals for a survey and assign weights to the answers to each question (e.g. Fig 4, column 420 and 430). The results for multiple respondents would be tallied and the weights applied to determine an index (e.g. 460a of Fig 4 and Fig 5). Further versions of a survey or surveys with similar goals could be correlated by the index (e.g. 460a, 460b, 406c of Fig 6). The programs display the indices of various surveys in the form of a graph (e.g. trend graph 600 of Fig 6). All survey creation tools, the surveys themselves, and the reports including the indices would be available from the system via the World Wide Web or via standalone client applications.

The Day Before the Election

As discussed above, using the survey system researchers can define and refine versions of a survey, post the surveys to their web sites, notify respondents, and obtain instant, concurrent survey results. Returning to our hypothetical political candidate, on the day before the election, the candidate can post any number of versions of a survey to obtain instant reaction to events of the day, such as campaign ads, speeches, or public appearances in contested areas. Questions can be refined to zero in on particular issues or events. Survey targets can be modified to target particular groups or geographic areas. Although the surveys and survey questions are different, the candidate can see the positive and negative effects of various actions or events by receiving the index trend graphs and other reports. Having the ability to receive immediate response provides a valuable and timely decision guiding resource.

Conclusion, Ramification, and Scope

Accordingly, the reader will see that the survey system with the built in benchmarking and index graphs of the present invention provides a means of creating surveys, assigning goals and weights, tallying results to determine an index, and graphing related indices to show trends.

Furthermore, the present invention has additional advantages in that:

(a) it provides a robust survey creation tool;

(b) it provides for almost instant results of surveys, especially web-based surveys;

(c) it provides a way for researchers to easily modify an existing survey and then correlate data from it with that collected via an earlier survey;

Although the descriptions above contain many specifics, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the preferred embodiments of this invention. For example, the format of the index graphs can have different styles, and the same relative operation, relative performance, and relative perceived value would result. Also, these processes can each be implemented as a hardware apparatus that will improve the performance significantly. Further, the example surveys of the illustrative example presented questions ordered by the objective (e.g. popularity followed by performance and re-election), in practice the survey system preferably presents questions in any order, including randomly to each respondent.

Thus the scope of the invention should be determined by the appended claims and their legal equivalents, and not solely by the examples given.

BENCHMARKING SURVEYS

Abstract: Methods and machines that provide for creation of surveys with a variety of questions. Each survey is assigned goals. Each question is weighted toward the goals. The results of each response to a survey is tallied to determine an index. The index is correlated with the indices of other related surveys to produce a graph of the trends of the success toward the goals.